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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/934,548	08/23/2001	Ping Mei	10015160-1	9182

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EXAMINER

WEISS, HOWARD

ART UNIT PAPER NUMBER

2814

DATE MAILED: 09/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/934,548

Applicant(s)

MEI ET AL.

Examiner

Howard Weiss

Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 7-9, 11-20 and 26-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 7-9, 11-20 and 26-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Attorney's Docket Number: 10015160-1

Filing Date: 8/23/01

Continuing Data: RCE established 6/16/03

Claimed Foreign Priority Date: none

Applicant(s): Mei et al. (Eaton, Jr.)

Examiner: Howard Weiss

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 6/16/03 has been entered.

Claim Objections

2. Claim 32 is objected to because of the following informalities: "specification" should be deleted. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 7 to 9, 11 and 32 are rejected under 35 U.S.C. 102(b) as being anticipated by DiMaria et al. (U.S. Patent No. 4,939,559).

DiMaria et al. show all aspects of the instant invention (e.g. Figure 1) including:

- a gate electrode **2** made of a diffusive metal (i.e. silver; Column 7 Lines 39 to 51)

- a floating gate 4 made of Al (ibid.)
- source 6, drain 7 and channel regions all part of a continuous semiconductor material 8 and said source/drain regions are doped regions
- a gate insulator 5 extending between said floating gate and said channel and said gate electrode and said gate insulator having conductive paths (Column 4 Lines 39 to 43) and portions of the diffusive metal

In reference to the claim language referring to responsiveness of the diffusive metal to a write voltage to diffuse conductive elements through the gate insulator, intended use and other types of functional language must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. *In re Casey*, 152 USPQ 235 (CCPA 1967); *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

In reference to the claim language pertaining to the adoption to prevent conductive elements form the diffusive metal, the claiming of a new use, new function, or unknown property which is inherently present in the prior art does not necessarily make the claim patentable. *In re Best*, 195 USPQ 430, 433 (CCPA 1977) and *In re Swinehart*, 439 F. 2d 210, 169 USPQ 226 (CCPA 1971); please see MPEP § 2112. Since DiMaria et al. show all the features of the claimed invention, the characteristic electric fields and field gradients are an inherent property of DiMaria et al.'s invention.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over DiMaria et al. and Kojima (U.S. Patent No. 5,644,528).

DiMaria et al. show most aspects of the instant invention (Paragraph 4) except for the floating gate being a plurality of floating gates. Kojima teaches (e.g. Figure 3) to use a plurality of floating gates 4_n to increase the memory capacity of the storage cell (Column 1 Lines 46 to 49). It would have been obvious to a person of ordinary skill in the art at the time of invention to use a plurality of floating gates as taught by Kojima in the device of DiMaria et al. to increase the memory capacity of the storage cell.

7. Claim 26 to 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over DiMaria et al. and Simpson (U.S. Patent No. 6,362,504).

DiMaria et al. show most aspects of the instant invention (Paragraph 4) except for the use of low temperature oxide (LTO) for the gate oxide. Simpson teaches (e.g. Column 2 Lines 59 to 65) to use LTO in gate oxides to make thin gate oxides (Column 2 Lines 14 to 17). It would have been obvious to a person of ordinary skill in

the art at the time of invention to use LTO in gate oxides as taught by Simpson in the device of DiMaria to make thin gate oxides.

8. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over DiMaria et al. and Simpson, as applied to Claim 26, and further in view of Kojima.

DiMaria et al. show most aspects of the instant invention (Paragraph 7) except for the floating gate being a plurality of floating gates. Kojima teaches (e.g. Figure 3) to use a plurality of floating gates 4_n to increase the memory capacity if the storage cell (Column 1 Lines 46 to 49). It would have been obvious to a person of ordinary skill in the art at the time of invention to use a plurality of floating gates as taught by Kojima in the device of DiMaria et al. to increase the memory capacity of the storage cell.

9. Claims 13 to 16 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over DiMaria et al. and Noguchi (U.S. Patent No. 6,005,270).

DiMaria et al. show most aspects of the instant invention (Paragraph 4) except for the plurality of memory cells as claimed and the substrate made of glass or plastic. Noguchi teaches (e.g. Figure 10 and Column 16 Lines 17 to 44) to use a substrate **10** of glass or plastic and a plurality of gate W_n and data B_n with memory cells MT_n where said lines cross (Figure 3A) to carrier out batch erasing (Column 12 Lines 37 to 39). It would have been obvious to a person of ordinary skill in the art at the time of invention to use a substrate of glass or plastic and a plurality of gate and data with memory cells where said lines cross as taught by Noguchi in the device of DiMaria et al. to carrier out batch erasing.

10. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Noguchi and DiMaria et al., as applied to Claim 13 above, and further in view of Kojima.

Noguchi and DiMaria et al. show most aspects of the instant invention (Paragraph 9) except for the floating gate being a plurality of floating gates. Kojima teaches (e.g. Figure 3) to use a plurality of floating gates 4_n to increase the memory capacity if the storage cell (Column 1 Lines 46 to 49). It would have been obvious to a person of ordinary skill in the art at the time of invention to use a plurality of floating gates as taught by Kojima in the device of Noguchi and DiMaria et al. to increase the memory capacity if the storage cell.

11. Claims 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Noguchi and DiMaria et al., as applied to Claim 13 above, and further in view of Ngo et al. (U.S. Patent No. 6,420,752).

Noguchi and DiMaria et al. show most aspects of the instant invention (Paragraph 9) except for the gate lines comprising first and second conductors. Ngo et al. teach (e.g. Figure 4A) to form a gate lines of two layers 218, 226 so as to form a "cap" or "passivation" layer to protect the gate line (Column 5 Lines 19 o 33). It would have been obvious to a person of ordinary skill in the art at the time of invention to form a gate lines of two layers as taught by Ngo et al. in the device of Noguchi and DiMaria et al. so as to form a "cap" or "passivation" layer to protect the gate line.

Response to Arguments

12. Applicant's arguments filed 6/16/03 have been fully considered but they are not persuasive. The Applicants state that DiMaria et al. do not explicitly disclose the conductive paths produced by a writing voltage and at no point states that the floating gate could be made of anything other than polysilicon. AS for the latter point, DiMaria et al. explicitly states (Column 7 Lines 40 to 45) that any metal or semi-metal could be utilized in place of silicon "in the practice of the present invention." DiMaria et al. goes on the list silver (a diffusive metal) and aluminum (metal for the floating gate made of silicon).

In reference to the conductive paths, DiMaria et al. state (Column 4 Lines 39 to 43) the gate insulator **5** is already slightly conductive for writing and erasing. Since the device of DiMaria et al. shows all aspects of the instant invention (including a diffusive metal gate), it meets the claimed invention. How the conductive paths are formed pertains to use and functional limitations which are given patentable weight only as ~~fact~~ they involve physical limitations of the device claimed. In view of these reasons and those set forth in the present office action, the rejections of the stated claims stand.

Conclusion

13. Papers related to this application may be submitted directly to Art Unit 2814 by facsimile transmission. Papers should be faxed to Art Unit 2814 via the Art Unit 2814 Fax Center located in Crystal Plaza 4, room 3C23. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (15 November 1989). The Art Unit 2814 Fax Center number is **(703) 308-7722** or **-7724**. The Art Unit 2814 Fax Center is to be used only for papers related to Art Unit 2814 applications. The official TC2800 Before-Final, **(703) 872-9318**, and After-Final, **(703) 872-9319**, Fax numbers will provide the fax sender with an auto-reply fax verifying receipt of their fax by the USPTO.
14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Howard Weiss at **(703) 308-4840** and between the hours of 8:00 AM to 4:00 PM (Eastern Standard Time) Monday through Friday or by e-mail via **Howard.Weiss@uspto.gov**.

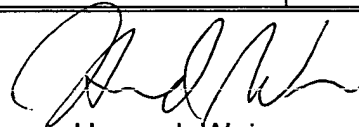
Any inquiry of a general nature or relating to the status of this application should be directed to the Group 2800 Receptionist at **(703) 308-0956**.

Art Unit: 2814

15. The following list is the Examiner's field of search for the present Office Action:

Field of Search	Date
U.S. Class / Subclass(es): 257/ 315	thru 9/5/03
Other Documentation: none	
Electronic Database(s): EAST, IEL	thru 9/5/03

HW/hw
5 September 2003


Howard Weiss
Examiner
Art Unit 2814